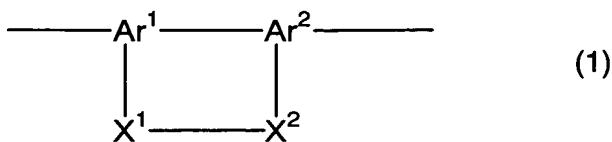


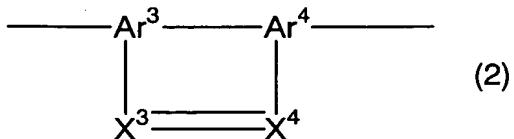
## Claims

1. A polymer light emitting material which contains a polymer compound comprising a repeating unit of the following formula (1) or (2) and having a polystyrene-reduced number-average molecular weight of  $10^3$  to  $10^8$ , and which exhibits light emission from the triplet excited state.



[wherein Ar<sup>1</sup> and Ar<sup>2</sup> each independently represent a trivalent aromatic hydrocarbon group or a trivalent heterocyclic group. X<sup>1</sup> and X<sup>2</sup> each independently represent O, S, C(=O), S(=O), SO<sub>2</sub>, C(R<sup>1</sup>)(R<sup>2</sup>), Si(R<sup>3</sup>)(R<sup>4</sup>), N(R<sup>5</sup>), B(R<sup>6</sup>), P(R<sup>7</sup>) or P(=O)(R<sup>8</sup>), (wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> each independently represent a hydrogen atom, halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylamino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group. (R<sup>1</sup> and R<sup>2</sup>) or (R<sup>3</sup> and R<sup>4</sup>) may mutually be connected to form a ring); wherein X<sup>1</sup> and X<sup>2</sup> are not the same excepting the case of S or Si(R<sup>3</sup>)(R<sup>4</sup>). X<sup>1</sup> and Ar<sup>1</sup> bond to adjacent carbon atoms in the aromatic ring of Ar<sup>1</sup>, and X<sup>2</sup> and Ar<sup>1</sup> bond to adjacent carbon atoms

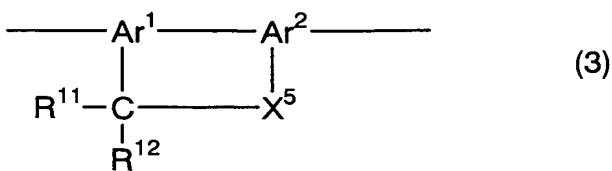
in the aromatic ring of  $\text{Ar}^2$ :



[wherein  $\text{Ar}^3$  and  $\text{Ar}^4$  each independently represent a trivalent aromatic hydrocarbon group or a trivalent heterocyclic group.  $\text{X}^3$  and  $\text{X}^4$  each independently represent N, B, P, C( $\text{R}^9$ ) or Si( $\text{R}^{10}$ ), (wherein  $\text{R}^9$  and  $\text{R}^{10}$  each independently represent a hydrogen atom, halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylarnino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group).  $\text{X}^3$  and  $\text{X}^4$  are not the same.  $\text{X}^3$  and  $\text{Ar}^4$  bond to adjacent carbon atoms in the aromatic ring of  $\text{Ar}^3$ , and  $\text{X}^4$  and  $\text{Ar}^3$  bond to adjacent carbon atoms in the aromatic ring of  $\text{Ar}^4$ ].

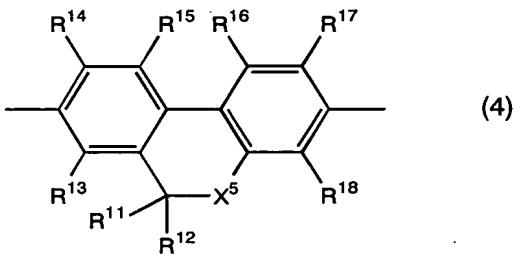
2. The polymer light emitting material according to Claim 1, wherein  $\text{X}^1$  in the formula (1) is C( $\text{R}^1$ )( $\text{R}^2$ ), Si( $\text{R}^3$ )( $\text{R}^4$ ), N( $\text{R}^5$ ), B( $\text{R}^6$ ), P( $\text{R}^7$ ) or P(=O)( $\text{R}^8$ ) (wherein,  $\text{R}^1$  to  $\text{R}^8$  represent the same meaning as defined above).

3. The polymer light emitting material according to Claim 1 or 2, wherein the repeating unit represented by the formula (1) defined above is a repeating unit represented by following formula (3):



[wherein  $\text{Ar}^1$  and  $\text{Ar}^2$  represent the same meaning as defined above.  $\text{R}^{11}$  and  $\text{R}^{12}$  each independently represent a hydrogen atom, halogen atom, alkyl group, aryl group, arylalkyl group or monovalent heterocyclic group;  $\text{R}^{11}$  and  $\text{R}^{12}$  may mutually be connected to form a ring.  $\text{X}^5$  represents O, S, C(=O), S(=O), SO<sub>2</sub>, Si(R<sup>3</sup>)(R<sup>4</sup>), N(R<sup>5</sup>), B(R<sup>6</sup>), P(R<sup>7</sup>) or P(=O)(R<sup>8</sup>) (wherein, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> represent the same meaning as defined above)].

4. The polymer light emitting material according to Claim 3, wherein the repeating unit represented by the formula (3) defined above is a repeating unit represented by following formula (4):

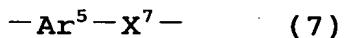
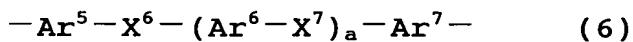


[wherein  $\text{X}^5$ ,  $\text{R}^{11}$  and  $\text{R}^{12}$  represent the same meaning as defined above.  $\text{R}^{13}$ ,  $\text{R}^{14}$ ,  $\text{R}^{15}$ ,  $\text{R}^{16}$ ,  $\text{R}^{17}$  and  $\text{R}^{18}$  each independently represent a hydrogen atom, halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylamino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano

group. ( $R^{14}$  and  $R^{15}$ ) or ( $R^{16}$  and  $R^{17}$ ) may mutually be connected to form a ring].

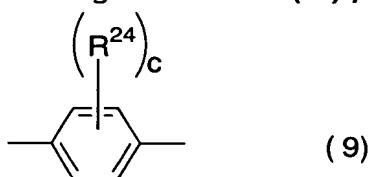
5. The polymer light emitting material according to Claim 4 wherein  $X^5$  is an oxygen atom.

6. The polymer light emitting material according to any of Claims 1 to 5, further having a repeating unit represented by the following formula (5), (6), (7) or (8):

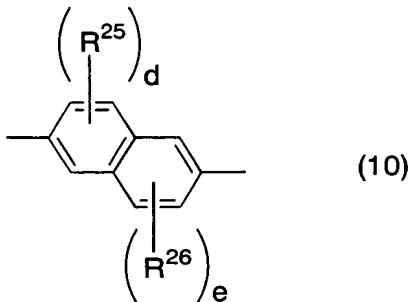


[wherein  $\text{Ar}^5$ ,  $\text{Ar}^6$  and  $\text{Ar}^7$  each independently represent an arylene group, divalent heterocyclic group or divalent group having a metal complex structure.  $\text{X}^6$  represents  $-\text{C}=\text{C}-$ ,  $-\text{N}(\text{R}^{21})-$  or  $-(\text{SiR}^{22}\text{R}^{23})_y-$ .  $\text{X}^7$  represents  $-\text{CR}^{19}=\text{CR}^{20}-$ ,  $-\text{C}=\text{C}-$ ,  $-\text{N}(\text{R}^{21})-$  or  $-(\text{SiR}^{22}\text{R}^{23})_y-$ .  $\text{R}^{19}$  and  $\text{R}^{20}$  each independently represent a hydrogen atom, alkyl group, aryl group, monovalent heterocyclic group, carboxyl group, alkoxy carbonyl group, aryloxy carbonyl group, arylalkyloxy carbonyl group, heteroaryloxy carbonyl group or cyano group.  $\text{R}^{21}$ ,  $\text{R}^{22}$  and  $\text{R}^{23}$  each independently represent a hydrogen atom, alkyl group, aryl group, monovalent heterocyclic group or arylalkyl group.  $a$  represents an integer of 0 or 1 and  $b$  represents an integer of 1 to 12].

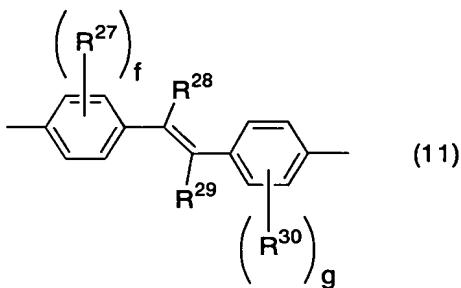
7. The polymer light emitting material according to Claim 6 wherein the formula (5) is a repeating unit represented by the following formula (9), (10), (11), (12), (13) or (14):



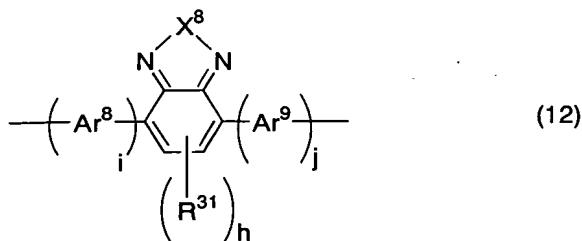
[wherein  $R^{24}$  represents a halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silyl amino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group.  $c$  represents an integer of 0 to 4];



[wherein  $R^{25}$  and  $R^{26}$  each independently represent a halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silyl amino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group.  $d$  and  $e$  each independently represent an integer of 0 to 3];

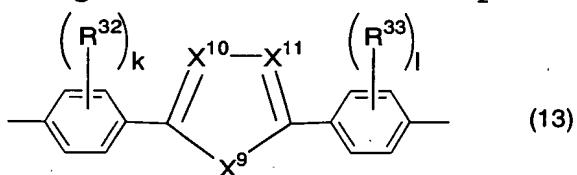


[wherein R<sup>27</sup> and R<sup>30</sup> each independently represent a halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylamino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group. R<sup>28</sup> and R<sup>29</sup> each independently represent a hydrogen atom, alkyl group, aryl group, monovalent heterocyclic group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group]:

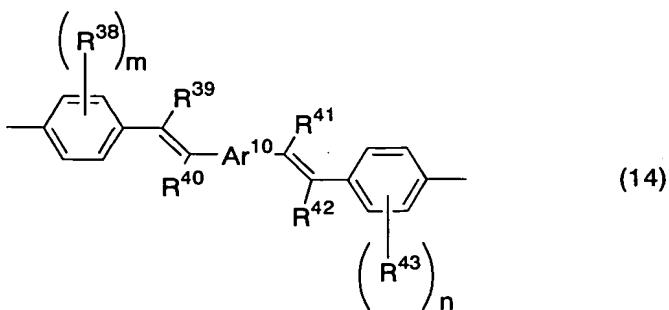


[wherein R<sup>31</sup> represents a halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue,

amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylamino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group.  $h$  represents an integer of 0 to 2.  $Ar^8$  and  $Ar^9$  each independently represent an arylene group, divalent heterocyclic group or divalent group having a metal complex structure.  $i$  and  $j$  each independently represent an integer of 0 or 1.  $X^8$  represents O, S, SO, SO<sub>2</sub>, Se or Te];

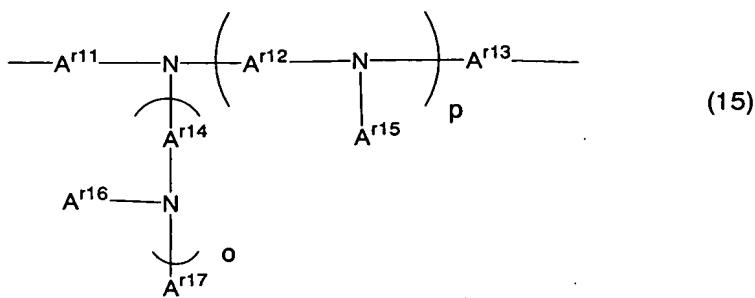


[wherein  $R^{32}$  and  $R^{33}$  each independently represent a halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylamino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group.  $k$  and  $l$  each independently represent an integer of 0 to 4.  $X^9$  represents O, S, SO, SO<sub>2</sub>, Se, Te, N-R<sup>34</sup> or SiR<sup>35</sup>R<sup>36</sup>.  $X^{10}$  and  $X^{11}$  each independently represent N or C-R<sup>37</sup>.  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$  and  $R^{37}$  each independently represent a hydrogen atom, alkyl group, aryl group, arylalkyl group or monovalent heterocyclic group]; and



[wherein R<sup>38</sup> and R<sup>43</sup> each independently represent a halogen atoms, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylamino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylethynyl group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group. m and n each independently represent an integer of 0 to 4. R<sup>39</sup>, R<sup>40</sup>, R<sup>41</sup> and R<sup>42</sup> each independently represent a hydrogen atom, alkyl group, aryl group, monovalent heterocyclic group, carboxyl group, alkoxycarbonyl group, aryloxycarbonyl group, arylalkyloxycarbonyl group, heteroaryloxycarbonyl group or cyano group. Ar<sup>10</sup> represents an arylene group, divalent heterocyclic group or divalent group having a metal complex structure].

8. The polymer light emitting material according to Claim 6 wherein the repeating unit represented by the above defined formula (5) is a repeating unit represented by formula (15):



[wherein  $Ar^{11}$ ,  $Ar^{12}$ ,  $Ar^{13}$  and  $Ar^{14}$  each independently represent an arylene group or divalent heterocyclic group.  $Ar^{15}$ ,  $Ar^{16}$  and  $Ar^{17}$  each independently represent an arylene group or monovalent heterocyclic group.  $o$  and  $p$  each independently represent an integer of 0 or 1, and  $0=o+p=1$ ].

9. The polymer light emitting material according to any of Claims 1 to 8 wherein the total amount of the repeating unit represented by the formulas (1) and (2) is 10 % by mole or more based on an amount of whole repeating units.

10. The polymer light emitting material according to any of Claims 1 to 9 further including at least one kind of materials selected from a hole transporting material, an electron transporting material and a light emitting material.

11. The polymer light emitting material according to any of Claims 1 to 10 comprising a compound exhibiting light emission from the triplet excited state in the form of a composition with a polymer compound having a repeating unit represented by the formula (1) or (2).

12. The polymer light emitting material according to any of Claims 1 to 10 having a structure exhibiting light emission from the triplet excited state at a side chain of a polymer compound having a repeating unit represented by the formula (1) or (2).

13. The polymer light emitting material according to any of Claims 1 to 10 having a structure exhibiting light emission from

the triplet excited state at a main chain of a polymer compound having a repeating unit represented by the formula (1) or (2).

14. The polymer light emitting material according to any of Claims 1 to 10 having a structure exhibiting light emission from the triplet excited state at an end of a polymer compound having a repeating unit represented by the formula (1) or (2).

15. The polymer light emitting material according to any of Claims 11 to 14, wherein a compound or structure exhibiting light emission from the triplet excited state is a metal complex.

16. An ink composition comprising a polymer light emitting material according to any one of Claims 1 to 15.

17. The ink composition according to Claim 16 having 1 to 100 mPa·s of viscosity at 25°C.

18. A light emitting thin film comprising a polymer light emitting material according to any of Claims 1 to 15.

19. A conductive thin film comprising a polymer light emitting material according to any of Claims 1 to 15.

20. An organic semiconductor thin film comprising a polymer light emitting material according to any of Claims 1 to 15.

21. A polymer light emitting device having a layer comprising a polymer light emitting material according to any of Claims 1 to 15 between electrodes consisting of an anode and a cathode.

22. The polymer light emitting device according to Claim 21, wherein the light emission layer further comprises a hole transporting material, an electron transporting material or a light-emitting material.

23. A flat light source comprising a polymer light emitting device according to any of Claims 21 to 22.

24. A segment display comprising a polymer light emitting device according to any of Claims 21 to 22.

25. A dot matrix display comprising a polymer light emitting device according to any of Claims 21 to 22.

26. A liquid crystal display comprising a backlight composed of a polymer light emitting device according to any of Claims 21 to 22.

27. An illumination comprising a polymer light emitting device according to any of Claims 21 to 22.